

# T<sub>C</sub>SUH Bi-Weekly Seminar

Texas Center for Superconductivity at the University of Houston

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## Quantum Measurement on Nano-Mechanical Resonators

**Friday, July 11, 2008**

Room 102, University of Houston Science Center

12:00 Noon – 1:00 p.m.

### Abstract

Harmonic oscillator has been well described in both classical mechanics and quantum mechanics. Recent advances in nano-fabrication technology make nano-mechanical resonator a model macroscopic system for investigating quantum behaviors in experiment, e.g., zero-point motion fluctuation. Studying the measurement (interaction) on quantum states of such macroscopic systems may lead to the achievement of ultimate sensitivity for many physical variables limited by quantum interactions. I will describe recent progress in pursuing the position detection limit governed by Heisenberg uncertainty principle and quantum back-action effects, in nano-mechanical resonators coupled to mesoscopic detectors such as single-electron transistors. I will also talk on the potentials of carbon-nanotube based devices in pushing the mechanics into quantum regime.

### Bio

Haibing Peng obtained his B.E., M.S., and PhD from Tsinghua University, Chinese Academy of Sciences, and Harvard University, respectively, and joined physics department at UH as an assistant professor since fall 2007. His current research interest resides in the electronic and mechanical properties of a variety of novel nanostructures.

*Persons with disabilities who require special accommodations in attending this lecture should call (713) 743-8210 as soon as possible.*



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